DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/05/2007 has been entered.

2. Applicant's arguments filed 11/05/2007 were addressed in the Advisory Action mailed 11/29/2007, however Applicants have not responded to the examiner's arguments presented in the Advisory Action, therefore they are reproduced below.

Response to Amendment

3. The amendment to the claims filed on 11-05-07 does not comply with the requirements of 37 CFR 1.121(c) because Applicant's amendments recite multiple claims as having the status identifier "Original" however the claims comprise the introduction of claim text, and therefore should have been identified as "Currently Amended" see for example, claims 25-28. Amendments to the claims filed on or after July 30, 2003 must comply with 37 CFR 1.121(c) which states:

> (c) *Claims*. Amendments to a claim must be made by rewriting the entire claim with all changes (*e.g.*, additions and deletions) as indicated in this subsection, except when the claim is being canceled. Each amendment document that includes a change to an existing claim, cancellation of an existing claim or addition of a new claim, must include a complete listing of all claims ever presented, including the text of all pending and withdrawn claims, in the application. The claim listing, including the text of the claims, in the amendment document will serve to replace all prior versions of the claims, in the application. In the claim listing, the status of every claim must be indicated after

its claim number by using one of the following identifiers in a parenthetical expression: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New), and (Not entered).

Response to Arguments

4. The rejections of claims 1-3, 5-13, 15, 17-24, 26, 63-72, and 77-86 under 35 USC 102(b) as set forth in the prior Office Action are withdrawn in response to Applicant's amendment to the claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-3, 5-15, 17-28, 63-76, 85 and 86 stand rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an in vitro method of acceleration of the cell cycle in fibroblasts using radio frequency radiation, in vitro method of activation of a cell cycle regulator, a signal transduction protein, a transcription factor, a DNA synthesis protein and a receptor in fibroblasts and keratinocytes using radio frequency radiation, does not reasonably provide enablement for an in vivo method for accelerating the cell cycle, comprising delivering to a cell an effective amount of any type of electromagnetic energy, or enablement for an in vivo method for activating a cell cycle regulator, signal transduction protein, transcription factor, DNA synthesis protein or a receptor in vivo, or enablement for an in vivo method for inhibiting an angiotensin receptor. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

This rejection is maintained for reasons given the Advisory Action mailed 11/05/2007. In the previous Office Action, In re Gardner, Roe and Willey, 427 F.2d 786, 789 (C.C.P.A. 1970) was cited for the proposition that the law requires Applicants' disclose how to use the claimed invention. Applicants submit that the Gardner case involved disclosure of rat dosages to enable treatment in human and enablement was lacking because the court found that human doses are likely to vary hugely from effective doses in rats. Applicants submit that the rats are not accepted models for correlating human dosages. Applicants also submit that the Simko and Mattson reference cited in the present Office Action clearly confirms that in vitro results are accepted in the art as reasonably correlating to in vivo results by using the in vitro data regarding cellular changes in response to electromagnetic field exposure as a basis to draw a variety of conclusion about in vivo effects and should be accepted as evidence for the enablement of the in vivo embodiments of the invention.

Applicants submit that in the case cited by The Johns Hopkins Univ. v. CellPro, Inc., 152 F.3d 1342, 47 U.S.P.Q.2d 1705 (Fed. Cir. 1998), the Federal Circuit clearly stated that routine experimentation does not constitute undue experimentation: The test [for undue experimentation] is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention claimed. Id. (Emphasis added) (citing PPG Indus.,

Inc. v. Guardian Indus. Corp., 75 F.3d at 1564, 37 U.S.P.Q.2d at 1623); see also In re Wands, 858 F.2d at 736-40, 8 U.S.P.Q.2d at 1403-07.

Applicants submit that for the reasons set forth in Applicants' previous response, it is submitted that the cited references confirm that the enabled in vitro working examples are recognized by those skilled in the art as correlating to in vivo conditions. Applicants submit that the Office has cited passages of these references that imply that some experimentation may be necessary by the skilled person to practice the methods. If this is the case, Applicants submit that it does not defeat enablement nor does it change the fact that the references confirm the art acceptance of in vitro results as correlating to in vivo results.

Applicants submit that unless the Office produces particular evidence to the contrary, the acknowledgement that in vitro methods are enabled should be accepted as evidence for the enablement of the in vivo embodiments of the invention. In view of the extensive teachings and working examples as previously discussed on the record; the Office's acknowledgement that the in vitro methods are enabled and the evidence those skilled in the art accepted the correlation between in vitro and in vivo results for the claimed methods, it is respectfully submitted that the enablement rejection is not properly supported.

Applicant's arguments filed 11/5/2007 have been fully considered but they are not persuasive. Applicant's main argument appears to be that the in vitro working examples provided by the specification support the enablement of the in vivo embodiments, based on arguments in The Johns Hopkins Univ. v. CellPro, Inc.,. and

Simko and Mattson (of record). However, enablement is based on evaluation of a combination of factors including scope of the claims, state of the art, unpredictability of the art, amount of guidance provided, working examples, nature of the invention and level of skill in the art. Although the specification does disclose an in vitro example of delivering radio frequency energy to chemically synchronized primary human fibroblasts and epidermal keratinocytes, the claimed methods encompass a much broader scope. The genus of the type electromagnetic energy to be administered is very broad and the scope of the proteins to be activated in order to activate a complex process such as the cell cycle is extremely broad.

With regard to guidance in the specification, the instant disclosure provides guidance regarding intensity and duration of energy for administration of radio frequency energy to an in vitro cell culture. The specification does not provide any guidance regarding the in vivo administration of radio frequency energy or any other type of electromagnetic energy. The specification does not provide guidance regarding the administration of an effective amount of electromagnetic energy to cells to accelerate the cell cycle in vivo when the cell cycle of cells has not been synchronized. The specification does not provide guidance regarding the acceleration of the cell cycle for any other cell besides fibroblasts. The specification does not provide guidance regarding administration parameters for any other type of electromagnetic energy in vivo or in vitro so that an effective amount would be delivered in order to accelerate the cell cycle or activate a cell cycle regulator, a signal transduction protein, a transcription factor, a DNA synthesis protein, a receptor or inhibit an angiotensin receptor. The

specification does not provide guidance regarding how to determine an effective amount of any of the claimed types of electromagnetic energy for specifically activating a cell cycle regulator.

Although the citation from Johns Hopkins v. Cellpro states that a considerable amount of experimentation is permissible, it also stipulates the condition that the experimentation is merely routine, or that the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention claimed. In this case, the instant specification does not provide a "reasonable amount of guidance" to enable the determination of how to practice a desired embodiment of the invention claimed without excessive and undue trial and error experimentation. Methods of this kind are not routine and are known in the art to be unpredictable, as taught by Simko and Mattsson. In response to the Applicants' request for particular evidence to the contrary, the Wands analysis of the Forman factors previously presented by the Examiner and discussion herein represents evidence that the in vivo embodiments are not enabled. The scope of the claimed methods is very broad, the methods are not routine, there are art recognized issues in delivering electromagnetic energy to an in vivo complex tissue and the working examples and guidance provided by the specification do not provide a sufficient basis for the skilled artisan to be able to make or use this invention without undue trial and error experimentation.

New Grounds of Rejection

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 5-8, 15, 17-23, 63-70, and 85-86 are rejected under 35 U.S.C. 102(b) as being anticipated by Gordon (US 4758429).

9. Gordon teaches a method for the treatment of arthritis and joint diseases comprising delivering a sufficient amount of electromagnetic energy to inflammatory diseased cells in the joint and joint space, see col. 2, lines 20-35, and col. 9, see Example II.

10. Since the methods of Gordon et al. teach the delivery of an effective amount of electromagnetic energy to joint cells, which comprise synovial tissue, absent evidence to the contrary, the methods of Gordon inherently function for accelerating the cell cycle of a cell, which results in an increase in DNA replication and the shortening of the G1 stage of the treated cells.

11. Gordon further teaches that the application of the localized static magnetic or electric field may occur concurrently with the application of an alternating, oscillating or pulsed electromagnetic field. That is to say, the localized static magnetic or electric field may be superimposed on the subject of interest while the alternating, oscillating or pulsed field is also being applied. Gordon also teaches that the alternating

electromagnetic field be applied at a radiofrequency of 1 to about 500 Hz, 1 Hz to 100 Hz, and a specific example of 500 Hz, for a period of approximately 10-20 minutes, and repeated as necessary. Furthermore, since the instant claims do not specifically define what an effective amount of electromagnetic energy is to produce an acceleration of the cell cycle 2-fold, 25%, 50%, or 75%, and includes the broad range of 1 to 300 mW/cm2, absent evidence to the contrary, the teachings of Gordon which comprises the administration of a radiofrequency of 1 to about 500 Hz for a period of approximately 10-20 minutes would produce an effective amount of electromagnetic energy to the treated cells according to the present invention.

12. Moreover, the prior art is applied to the extent that it discloses methods which "comprise" delivering electromagnetic energy to a cell, and that other components may be encompassed by the disclosed methods.

Claim Rejections - 35 USC § 112

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 9-14 and 71-76 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

15. Claims 9-14 and 71-76 recite "further comprising delivering to said cell an effective amount of electromagnetic energy to..." This additional step is unclear since it is not apparent that two separate doses of electromagnetic energy is to be delivered to the cells, or if Applicants are further defining the effects of delivering the first dose of electromagnetic energy to the treated cells.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet L. Epps-Ford whose telephone number is 571-272-0757. The examiner can normally be reached on M-F, 10:00 AM through 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach can be reached on 571-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Janet L. Epps-Ford/
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/J. L. E. /